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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,778	02/25/2004	Masatomo Kojima	501558.20011	3716
26418	7590	09/21/2005		
REED SMITH, LLP ATTN: PATENT RECORDS DEPARTMENT 599 LEXINGTON AVENUE, 29TH FLOOR NEW YORK, NY 10022-7650			EXAMINER AGUIRRECHEA, JAYDI A	
			ART UNIT	PAPER NUMBER
			2834	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/786,778

Applicant(s)

KOJIMA, MASATOMO

Examiner

Jaydi A. Aguirrechea

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 2/25/03. It is noted, however, that applicant has not filed a certified copy of the JP 2003-047546 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 6-7 and 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/76007 to Murai.

Murai discloses a piezoelectric element comprising a plurality of piezoelectric layers (43) formed of piezoelectric material (paragraph [0065]); a plurality of electrode layers (44, 45) which are stacked alternately with the piezoelectric layers; and at least one active portion which is provided by respective portions of the piezoelectric layers, such that each of said respective portions is sandwiched by corresponding two electrode layers of the plurality of electrode layers, said corresponding two electrode layers being opposed to each other in a direction of the alternate stacking of the piezoelectric layers and the electrode layers, said at least one active portion being deformed when an electric voltage is applied to the plurality of electrode layers,

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the piezoelectric layers including at least one first layer having a first thickness, and at least one piezoelectric second piezoelectric layer having a second thickness greater than the first thickness.

Note that piezoelectric layers 431 and 432 have a first thickness and layers 433-436 have a second thickness greater than the first thickness. See paragraph [0063].

With regards to claim 2, the piezoelectric actuator is fixed to a diaphragm, which is used as an inkjet recording head, inkjet printer or other liquid ejecting apparatus.

With regards to claim 3, layers 431 and 432 form the first sheets and layers 433-436 form the second sheet, wherein the second number is greater than the first number.

With regards to claim 4, layers 431 and 432 have the same thickness.

With regards to claim 6, Murai discloses the first piezoelectric layer comprising a single first piezoelectric sheet having a first thickness and a second piezoelectric layer comprising a second sheet having a second thickness.

With regards to claim 7, Murai discloses the thicknesses of the first layer to be 10-100nm and the thickness of the second layers to be 0.5-1.5 μm .

With regards to claim 9, the actuator is fixed to a cavity unit having ink chambers to provide an ink jet printer head as explained above. Murai discloses electrodes 44 and 42 where electrode 44 is a common electrode.

With regards to claim 10, Murai discloses the first and second piezoelectric layers having different thicknesses.

With regards to claim 11, the thicker piezoelectric layers (433-436) are considered restrictive layers restricting the deformation of the active portion.

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With regards to claims 12-15 are rejected under Murai for the same reasons as explained above. See paragraphs [0049]-[0070].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murai.

With regards to claim 5, Murai discloses the claimed invention except for the thicknesses of the piezoelectric sheets falling in the range of 10 μ m-150 μ m. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to disclose the specific value or range of thicknesses depending on the specific design and use of the device, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

With regards to claim 8, it would have been an obvious matter of design choice to select the piezoelectric layers to include a first number of said first piezoelectric layers, and a second number of said second piezoelectric layer or layers, the second number being not greater than half a sum of the first number and the second number, since the applicant has not disclosed that selecting the specific number of layers solves any problem or is for a particular reason. It appears that the claimed invention would perform equally well with a greater number of second layers.

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Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaydi A. Aguirrechea whose telephone number is 571-272-2018. The examiner can normally be reached on M-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JAA

9/18/2005


DARREN SCHUBERG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800